WHAT IS CLAIMED IS:

- 1. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least 85 wt.% protein on a dry solids basis; and the modified oilseed material has an MW₅₀ of at least 200 kDa; and at least 40 wt.% of the protein in a 50 mg sample of the modified oilseed material is soluble in 1.0 mL water at 25°C.
- 2. The frozen dessert composition of claim 1 wherein said frozen dessert composition is a pasteurized frozen dessert composition.
- 3. The frozen dessert composition of claim 1 wherein said frozen dessert composition has a pH of about 3.5 to 5.0.
- 4. The frozen dessert composition of claim 1 comprising about 1 to 10 wt. % protein.
- 5. The frozen dessert composition of claim 1 comprising about 10 to 30 wt.% protein on a dry solids basis.
- 6. A protein supplemented frozen dessert composition comprising a modified soybean material, sugar, and water;

wherein the modified soybean material comprises at least 90 wt. % protein on a dry solids basis; and the modified soybean material has an MW_{50} of at least 400 kDa and at least 40 wt. % of the protein in a 50 mg sample of the modified soybean material is soluble in 1.0 mL water at 25°C.

7. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material is produced by a process which includes:

extracting oilseed material with an aqueous alkaline solution to form a suspension of particulate matter in an oilseed extract; and

passing the extract through a filtration system including a microporous membrane to produce a permeate and a protein-enriched retentate, wherein the microporous membrane has a filtering surface with a contact angle of no more than 30 degrees.

8. The frozen dessert composition of claim 7 wherein the modified oilseed material is produced by a process which includes:

extracting soybean material at 20°C to 60°C with an aqueous solution having a pH of 7.5 to 10.0 to form a mixture of particulate matter in an alkaline extract solution;

removing at least a portion of the particulate matter from the mixture to form a clarified extract;

passing the clarified extract at 55°C to 60°C through a filtration system including a microporous modified polyacrylonitrile membrane to produce a permeate and a protein-enriched retentate, wherein the microporous modified polyacrylonitrile membrane has an MWCO of 25,000 to 500,000 and a filtering surface with a contact angle of no more than 30 degrees; and

diafiltering the protein-enriched retentate through the filtration system to produce a protein-containing diafiltration retentate.

- 9. The frozen dessert composition of claim 8 wherein the modified oilseed material is produced by a process which further includes heating the diafiltration retentate to at least 75°C for a sufficient time to form a pasteurized retentate.
- 10. The frozen dessert composition of claim 8 wherein the modified oilseed material is produced by a process which includes extracting the soybean material at 20°C to 60°C for no more than one hour with the aqueous solution to form the mixture.
- 11. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt.% protein on a dry solids basis; and the modified oilseed material has a bacterial load of no more than 50,000 cfu/g and a melting temperature of at least 87°C.

- 12. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt. % protein on a dry solids basis; and the modified oilseed material has an MW₅₀ of at least about 200 kDa and a turbidity factor of no more than about 0.95 at 500 nm.
- 13. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt.% protein on a dry solids basis; and the modified oilseed material has an MW_{50} of at least about 200 kDa and has an NSI of at least about 80.
- 14. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt.% protein on a dry solids basis; at least about 40 wt.% of the modified oilseed material has an apparent molecular weight of at least 300 kDa; and the modified oilseed material has a turbidity factor of no more than about 0.95 at 500 nm.
- 15. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt. % protein on a dry solids basis; the modified oilseed material has an MW_{50} of at least 200 kDa and at least 40 wt. % of the protein in a 50 mg sample of the modified oilseed material is soluble in 1.0 mL water at 25°C.
- 16. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt.% protein on a dry solids basis; and the modified oilseed material has a bacterial load of no more than 50,000 cfu/g and a melting temperature of at least 87°C.
- 17. A protein supplemented frozen dessert composition comprising a modified oilseed material, wherein the modified oilseed material comprises at least about 85 wt. % protein on a dry solids basis; at least about 40 wt. % of the modified oilseed material has an

apparent molecular weight of at least 300 kDa; and at least about 40 wt. % of the protein in a 50 mg sample of the modified oilseed material is soluble in 1.0 mL water at 25°C.

- 18. The frozen dessert composition of claim 17 wherein the modified oilseed material has a turbidity factor of no more than about 0.95 at 500 nm.
- 19. The frozen dessert composition of claim 17 wherein the modified oilseed material has an NSI of at least about 80.
- 20. The frozen dessert composition of claim 17 wherein the modified oilseed material is a modified soybean material which includes at least about 90 wt. % protein on a dry solids basis.
- 21. The frozen dessert composition of claim 17 wherein the modified oilseed material has a melting temperature of at least about 87°C.
- The frozen dessert composition of claim 17 wherein the modified oilseed material has an MW_{50} of at least about 400 kDa.
- 23. The frozen dessert composition of claim 17 wherein the modified oilseed material includes at least about 1.4 wt. % cysteine as a percentage of total protein.
- 24. The frozen dessert composition of claim 17 wherein the modified oilseed material is a soy protein isolate having a substantially bland taste.
- 25. The frozen dessert composition of claim 17 wherein the modified oilseed material has a dry Gardner L value of at least about 85.
- 26. The frozen dessert composition of claim 17 the modified oilseed material has a bacterial load of no more than about 50,000 cfu/g.
- 27. The frozen dessert composition of claim 17 wherein the modified oilseed material has a latent heat of at least about 5 joules/g.

- 28. The frozen dessert composition of claim 17 wherein the modified oilseed material has a ratio of sodium ions to a total amount of sodium, calcium and potassium ions of no more than about 0.5.
- 29. The frozen dessert composition of claim 17 wherein the modified oilseed material has no more than about 7000 mg/kg (dsb) sodium ions.